AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A security communication packet processing apparatus that performs at least one of encryption processing, decryption processing and authentication processing to an inputted packet, said security communication packet processing apparatus comprising:

at least one encryption processing unit operable to perform the encryption processing and the decryption processing in a data block unit of B1 bits;

at least one authentication processing unit operable to perform the authentication processing in a data block unit of B2 bits in parallel to the encryption processing or the decryption processing performed by said at least one encryption processing unit, and output an authentication value indicating the result of the authentication processing, the data block unit of B2 bits being n times the data block unit of B1 bits;

at least one data block accumulation unit operable to accumulate the data blocks to which the encryption processing has been performed by said at least one encryption processing unit, and, when the amount of accumulated data blocks reaches B2 bits, output the data blocks to said at least one authentication processing unit;

a packet construction unit operable to receive the encrypted or decrypted data blocks from said ~~one or more~~ at least one encryption processing ~~units~~unit, receive the authentication value from said ~~one or more~~ at least one authentication processing ~~units~~unit, and construct a packet including the received data blocks and the authentication value; and

a control unit operable to divide the inputted packet into the data blocks of B1 bits, and output the data blocks sequentially to said at least one encryption processing unit~~.~~;

wherein when the inputted packet is a packet which requires both encryption processing and authentication processing, the encryption processing of a first data block by said at least one encryption processing unit and the authentication processing of a second data block by said at least one authentication unit are performed in parallel, the second data block to which the authentication processing is being performed being a data block which is different from the first data block and to which the encryption processing has already been performed by said at least one encryption unit and accumulated in said

at least one data block accumulation unit.

2. (Previously Presented) The security communication packet processing apparatus according to Claim 1, wherein:

said control unit is operable to judge whether the inputted packet is a first type packet requiring the encryption processing and the authentication processing, a second type packet requiring the decryption processing and the authentication processing, a third type packet requiring one of the encryption processing and the decryption processing, or a fourth type packet requiring the authentication processing only;

when said control unit judges that the inputted packet is the first type packet, said control unit is operable to divide the packet into the data blocks of B1 bits and output the data blocks sequentially to said at least one encryption processing unit;

when said control unit judges that the inputted packet is the second type packet, said control unit is operable to divide the packet into the data blocks of B1 bits, output the data blocks of B1 bits sequentially to said encryption processing unit, divide the packet or a duplicate of the packet into the data blocks of B2 bits, and output the data blocks of B2 bits sequentially to said at least one authentication processing unit;

when said control unit judges that the inputted packet is the third type packet, said control unit is operable to divide the packet into the data blocks of B1 bits and output the data blocks sequentially to said at least one encryption processing unit; and

when said control unit judges that the inputted packet is the fourth type packet, said control unit is operable to divide the packet into the data blocks of B2 bits and output the data blocks sequentially to said at least one authentication processing unit.

3. (Previously Presented) The security communication packet processing unit according to Claim 1, wherein:

the number of at least one of said at least one encryption processing unit and said at least one authentication processing unit is two or more; and

the number of said at least one data block accumulation unit is equal to the number of said at least one encryption processing unit.

4. (Previously Presented) The security communication packet processing apparatus according to Claim 3, wherein said control unit is operable to specify, among two or more encryption processing units or two or more authentication processing units, said encryption processing unit or said authentication processing unit that is ready for processing, and output the data blocks to the specified encryption processing unit or authentication processing unit.

5. (Previously Presented) The security communication packet processing apparatus according to Claim 1, further comprising a data path connection switching unit operable to connect the output of said control unit and the input of said at least one encryption processing unit, the output of said control unit and the input of said at least one authentication processing unit, the output of said at least one encryption processing unit and the input of said at least one data block accumulation unit, and the output of said at least one data block accumulation unit and the input of said at least one authentication processing unit, respectively and independently.

6. (Previously Presented) The security communication packet processing apparatus according to Claim 5, wherein:

said control unit is operable to judge whether the inputted packet is a first type packet requiring the encryption processing and the authentication processing, a second type packet requiring the decryption processing and the authentication processing, a third type packet requiring one of the encryption processing and the decryption processing, or a fourth type packet requiring the authentication processing only;

when said control unit judges that the inputted packet is the first type packet, said control unit is operable to control said data path connection switching unit so as to connect the output of said control unit and the input of said at least one encryption processing unit, the output of said at least one encryption processing unit and the input of said at least one data block accumulation unit, and the output of said at least one data block accumulation unit and the input of said authentication processing unit;

when said control unit judges that the inputted packet is the second type packet, said control unit is operable to control said data path connection switching unit so as to

connect the output of said control unit and the input of said at least one encryption processing unit, and the output of said control unit and the input of said at least one authentication processing unit;

when said control unit judges that the inputted packet is the third type packet, said control unit is operable to control said data path connection switching unit so as to connect the output of said control unit and the input of said at least one encryption processing unit; and

when said control unit judges that the inputted packet is the fourth type packet, said control unit is operable to control said data path connection switching unit so as to connect the output of said control unit and the input of said at least one authentication processing unit.

7. (Previously Presented) The security communication packet processing apparatus according to Claim 6, wherein:

the number of at least one of said at least one encryption processing unit and said at least one authentication processing unit is two or more; and

the number of said at least one data block accumulation unit is equal to the number of said at least one encryption processing unit.

8. (Previously Presented) The security communication packet processing apparatus according to Claim 7, wherein said control unit is operable to specify, among two or more encryption processing units or two or more authentication processing units, said encryption processing unit or said authentication processing unit that is ready for processing, and make said data path connection switching unit perform a connection for the specified encryption processing unit or authentication processing unit.

9. (Previously Presented) The security communication packet processing apparatus according to Claim 1, further comprising a processing data saving unit provided for each of at least one of said at least one encryption processing unit, said at least one authentication processing unit and said at least one data block accumulation unit, each processing data saving unit having a memory area for temporarily suspending the

processing of the data blocks in the processing unit for which said processing data saving unit is provided, and saving the data blocks which were being processed in the processing unit corresponding respectively to the processing unit.

10. (Previously Presented) The security communication packet processing apparatus according to Claim 9, wherein said control unit is operable to specify the processing unit that is performing the processing of the data blocks of the packet with the lowest priority among the processing units, and, after suspending the processing of the data blocks in the processing unit and saving the data blocks which were being processed in the processing unit into said processing data saving unit provided to the processing unit performing the processing of the data blocks of the packet with the lowest priority, make the processing unit perform the processing of the data blocks of the inputted packet.

11. (Previously Presented) The security communication packet processing apparatus according to Claim 10, further comprising a data path connection switching unit operable to connect the output of said control unit and the input of said at least one encryption processing unit, the output of said control unit and the input of said at least one authentication processing unit, the output of said at least one encryption processing unit and the input of said at least one data block accumulation unit, and the output of said at least one data block accumulation unit and the input of said at least one authentication processing unit, respectively and independently.

12. (Previously Presented) The security communication packet processing apparatus according to Claim 11, wherein:

the number of at least one of said at least one encryption processing unit and said at least one authentication processing unit is two or more; and

the number of said at least one data block accumulation unit is equal to the number of said at least one encryption processing unit.

13. (Previously Presented) The security communication packet processing apparatus according to Claim 1, further comprising a processing data saving unit provided for each

of at least two of said at least one encryption processing unit, said at least one authentication processing unit and said at least one data block accumulation unit, each processing data saving unit having a memory area shared by the processing units for temporarily suspending the processing of the data blocks in the processing unit and saving the data blocks which were being processed in the processing units.

14. (Previously Presented) The security communication packet processing apparatus according to Claim 13, wherein said control unit is operable to specify, among the processing units, the processing unit that is performing the processing of the data blocks of the packet with the lowest priority, and, after suspending the processing of the data blocks in the processing unit and saving the data blocks which were being processed in the processing unit in said processing data saving unit provided to the processing unit performing the processing of the data blocks of the packet with the lowest priority, make the processing unit perform the processing of the data blocks of the inputted packet.

15. (Previously Presented) The security communication packet processing apparatus according to Claim 14, further comprising a data path connection switching unit operable to connect the output of said control unit and the input of said at least one encryption processing unit, the output of said control unit and the input of said at least one authentication processing unit, the output of said at least one encryption processing unit and the input of said at least one data block accumulation unit, and the output of said at least one data block accumulation unit and the input of said at least one authentication processing unit, respectively and independently.

16. (Previously Presented) The security communication packet processing apparatus according to Claim 15, wherein:

the number of at least one of said at least one encryption processing unit and said at least one authentication processing unit is two or more; and

the number of said at least one data block accumulation unit is equal to the number of said at least one encryption processing unit.

17. (Previously Presented) The security communication packet processing apparatus according to Claim 1, wherein the B1 is 64, and the B2 is 512.

18. (Previously Presented) A security communication packet processing method that performs at least one of encryption processing, decryption processing and authentication processing to an inputted packet, said security communication packet processing method comprising:

dividing the inputted packet into data blocks of B1 bits;

performing the encryption processing or the decryption processing to the divided data blocks of B1 bits;

accumulating the encrypted data blocks and outputting the data blocks when the amount of accumulated data blocks reaches B2 bits, B2 bits being n times the number of B1 bits;

performing the authentication processing to the outputted data blocks of B2 bits in parallel to the encryption processing or the decryption processing, and outputting the authentication value indicating the result of the authentication processing;

receiving the encrypted or decrypted data blocks, receiving the outputted authentication value, and constructing the packet including the received data blocks and the authentication value~~.~~;

wherein when the inputted packet is a packet which requires both encryption processing and authentication processing, the encryption processing of a first data block performed in said performing of the encryption processing and the authentication processing of a second data block performed in said performing of the authentication processing are performed in parallel, the second data block to which the authentication processing is being performed being a data block which is different from the first data block and to which the encryption processing has already been performed in said performing of the encryption processing and accumulated in said accumulating of the encrypted data blocks.

19. (Previously Presented) The security communication packet processing method according to Claim 18, further comprising:

judging whether the inputted packet is a first type packet requiring the encryption processing and the authentication processing, a second type packet requiring the decryption processing and the authentication processing, a third type packet requiring only one of the encryption processing and the decryption processing, or a fourth type packet requiring the authentication processing only, and when the inputted packet is judged to be the first type packet, controlling so that the division in said dividing of the inputted packet, the encryption processing performed in said performing of the encryption processing or the decryption processing, the accumulation in said accumulating of the encrypted data blocks, the authentication processing performed in said performing of the authentication processing and the construction performed in said constructing of the packet are performed.

20. (Previously Presented) The security communication packet processing apparatus according to claim 5, wherein said data path connection switching unit is operable to switch a data path between two of said control unit, said at least one encryption processing unit, said at least one authentication processing unit and said at least one data block accumulation unit, so that only packets A pass through said at least one data block accumulation unit and only packets B bypass said at least one data block accumulation unit, the packets A being a packet which requires both encryption processing and authentication processing and a packet which requires both decryption processing and authentication processing, and the packets B being a packet which requires only encryption processing, a packet which requires only decryption processing and a packet which requires only authentication processing.

21. (Previously Presented) The security communication packet processing apparatus according to claim 9, wherein the data blocks are saved from said at least one encryption processing unit and said at least one authentication processing unit into said processing data saving unit, and the saved data blocks are restored from said processing data saving unit to the said at least one encryption processing unit and said at least one authentication processing unit, via said at least one data block accumulation unit.

22. (Previously Presented) The security communication packet processing apparatus according to claim 14, wherein said control unit is further operable to make another processing unit read the data blocks from said processing data saving unit and restart the processing, the another processing unit having a function equivalent to a function of the processing unit performing the processing of the data blocks of the packet with the lowest priority, from which processing unit the data blocks are saved into said processing data saving unit.